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Facile synthesis of bimetallic gold-palladium nanocrystals as effective and durable advanced catalysts for improved electrocatalytic performances of ethylene glycol and glycerol oxidation

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Abstract:

In this work, well-defined bimetallic AuPd alloyed nanocrystals (AuPd NCs) were facilely synthesized by a straightforward and controllable one-step wet-chemical strategy, using a biomolecule (*L*-hydroxyproline, *L*-Hyp) as the green stabilizer and the structure-directing agent. Their morphology, size, composition, crystal structures and growth mechanism were investigated by a series of techniques. The synthesized architectures exhibited enlarged electrochemically active surface area (ECSA), improved catalytic activity, enhanced durability and stability towards ethylene glycol oxidation reaction (EGOR) and glycerol oxidation reaction (GOR) in alkaline electrolytes in comparison with commercial Pd black catalyst.

Keywords: Bimetallic AuPd nanocrystals; *L*-Hydroxyproline; Direct alcohol fuel cells; Ethylene glycol oxidation; Glycerol oxidation

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